

name:	KEY KEY KEY KEY KEY
course:	csci 10
assignment:	ieee 754
prepared:	Mon, May 18, 2020 // 8:18 am

1. Write the following value in binary, using single-precision IEEE 754:
99.75

0b0_10000101_100011110000000000000000

2. Write the following value in binary, using single-precision IEEE 754:
0.125

0b0_01111100_000000000000000000000000

3. Write the following value in binary, using single-precision IEEE 754:
-10.75

0b1_10000010_010110000000000000000000

4. Write the following value in binary, using single-precision IEEE 754:
3.14

0b0_10000000_10010001111010111000011

5. Write the following single-precision IEEE 754 value in decimal:
0b0_10000010_100111000000000000000000

12.875

6. Write the following single-precision IEEE 754 value in decimal:
0b0_11000000_101010000000000000000000

6.110484 * 10¹⁹

7. Write the following single-precision IEEE 754 value in decimal:
0b1_10000001_110110000000000000000000

-7.375

8. What variant of IEEE 754 does the ARM Cortex-M4 FPU support?

The ARM Cortex-M4 FPU provides the single-precision variant of IEEE 754.

9. List the ARM Cortex-M4 instructions to (1) perform floating-point addition, (2) perform floating-point division, (3), perform floating-point multiplication, (4) perform floating-point subtraction, and (5) perform floating-point square root.

VADD.F32
VDIV.F32
VMUL.F32
VSUB.F32
VSQRT.F32

10. How many single-precision registers does the ARM Cortex-M4 FPU provide? What are the labels for these registers?

The ARM Cortex-M4 FPU provides an extension register file containing 32 single-precision registers. The registers are labeled s0-s31.